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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/550,859	09/26/2005	Yasushi Murakami	740709-542	3576

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EXAMINER	
PARVINI, PEGAH	
ART UNIT	**PAPER NUMBER**
1755	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/550,859	MURAKAMI ET AL.	
	Examiner	Art Unit	
	Pegah Parvini	1755	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 July 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2 and 5-7* is/are rejected.

7)☒ Claim(s) *3-4* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *20060306*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. The term "large number" in claim 1 is a relative term which renders the claim indefinite. The term "large number" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

It is not clear as to what proportion of fine voids the "large number" refers to.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-2 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent No. 5,256,386 to Nyström et al.

5. Regarding claims 1-2, Nyström et al. teach silica particles with high degree of purity and porosity which are produced through sol-gel technique in that porous silicon dioxide particles are formed from amorphous SiO_2; the reference disclose that the amorphous silica particles are used in several applications such as in chromatography equipment (column 1, lines 1-20). Furthermore, Nyström et al. disclose that the substantially spherical particles of that invention have a pore size distribution where the part of pore volume within the range of from 0.5d to 1.5d, where d is the mean pore diameter, is greater than 90% (column 2, lines 23-29). It, further, discloses that the part of the pore volume within the range of from 0.5d to 1.5d is suitably greater than 94% (column 2, lines 36-39). In addition, the reference discloses that the mean pore diameter, d, is suitably within the range from 6 to 50 nm (column 2, lines 33-35).

Even though Nyström et al. is silent to the refractive index in the range of 1.01 to 1.40 for light at λ=500 nm and does not expressly disclose transparent silica, these recited properties are inherent to the disclosed silica particles considering the fact that Nyström et al. teach the same silica particles with a substantially similar process of making. See MPEP § 2112.01.

It is noted that taking the mean pore diameter of 6nm (d), considering the pore size distribution of 0.5d to 1.5d, the distribution of 3nm-9nm is obtained for 90% or more of the pore volume.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nyström et al. in view of US Patent No. 5,175,027 to Holmes-Farley et al.

8. Regarding claims 5-7, Nyström et al. disclose amorphous silica particles with 90 vol.% of voids having diameters between 3 to 9nm. Although the reference discloses a substantial similar process, it does not expressly disclose the steps as recited in claims 6-7, nor expressly disclose the firing of the silica composition.

Holmes-Farley et al. disclose a method of preparing uniform, ultra-thin coatings on substrates by sol-gel processing in which the metal alkoxide used is silicon alkoxide such as tetramethyoxysilane, tetraethoxysilane and more (column 1, lines 5-35; column 4, lines 16-20, 52-58). Furthermore, the reference discloses typical solvents used as ethanol, acetone and more (column 4, lines 65-66). In addition, the reference discloses the use of a base catalyst such as ammonium hydroxide which is weak base; considering the fact that acetone is a weak acid, as it is known in the art that the combination of a weak acid and a weak base would result in a salt.

Moreover, the reference discloses treating substrates, onto which the coating is applied, such as polycarbonate (which contains carboxylic groups) with hydroxyl group

thought state of the art means which results in compounds having carboxylhydroxyl groups (column 5, lines 44-50). Additionally, the reference discloses the desired active hydrogen groups are obtained from hydroxyl groups or carboxylic acid groups (column 5, lines 35-45). This increases the activity since it increases the number of active hydrogen groups (column 5).

Finally, Holmes-Farley et al. disclose that after rinsing and drying the coated substrate, it is baked at temperatures of 50°C to 1600°C to cure the coated film (column 6, lines 59-67).

It would have been obvious to a person of ordinary skill in the art to modify Nyström et al. to include the details in the sol-gel process step as that taught by Holmes-Farley et al. motivated by the fact that Holmes-Farley et al. teach that the disclosed sol-gel process is used in coating substrate with a uniform, ultra-thin film.

Allowable Subject Matter

9. Claims 3-4 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art fail to disclose amorphous porous silicon dioxide with pore diameters of 2nm or less.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US Patent No. 4,992,251 to Aldcroft et al.

US Patent No. 5,958,577 to Sugimoto et al.

US Patent No. 4,965,091 to Fratello et al.

US Patent No. 4,788,164 to Che et al.

US Patent No. 6,391,465 to Zheng et al.

US Patent No. 5,939,197 to Blohowiak et al.

US Patent No. 4,979,973 to Takita et al.

US Patent No. 3,301,635 to Bergna et al.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pegah Parvini whose telephone number is 571-272-2639. The examiner can normally be reached on Monday to Friday 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on 571-272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

PP